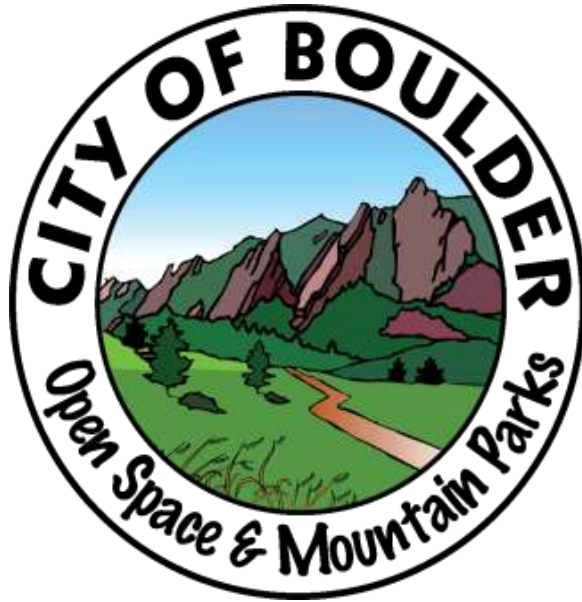


2012 USA Pro-Cycle Challenge Pre/Post Race  
Resource Condition Assessment  
Photo Point Monitoring – Summary Report



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# 2012 USA Pro-Cycle Challenge Pre/Post Race Resource Condition Assessment – Summary Report

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## **Background**

In order to assess the effect of the race upon open space resources, Open Space and Mountain Parks (OSMP) staff qualitatively assessed on-the-ground conditions in selected locations before and after the August 25, 2012 USA Pro-Cycle Challenge (henceforth “the race”).

## **Project goals**

### *Management Goals*

OSMP staff intended to manage the race to avoid resource condition changes resulting in the need to restore trails, visitor facilities, vegetation or other natural features; or at least minimize the amount of restoration needed to address the effects of the race.

### *Monitoring Goals*

Staff wished to assess OSMP’s ability to successfully meet the management goal. Monitoring was done with repeat photography in areas identified as the most vulnerable and sensitive locations near the race route. Since this was a novel situation for OSMP, a secondary goal of the monitoring was to determine if photo documentation was an effective way to detect the race’s effects and to inform decisions about improving race management. The third goal was to determine if future monitoring should be recommended, and if so, to suggest ways to improve the benefits and cost effectiveness of monitoring.

Infrared trail counters were installed to gather data to estimate the number of passes by the monitors on trails used for access and egress from the race.

## **Methods<sup>1</sup>**

### *Photo Points*

Repeat photography is a well established method to visually document changes to resources such as vegetation, soils and/or landscapes. In photo point monitoring, photographs are retaken each session from the same location, making efforts to frame the same view so that differences between intervals can be compared. For this project, repeat photography<sup>2</sup> occurred at 19 pre-selected sites (or photo points) (**Figure 1**) over three intervals: before installation of fencing, after fence installation but before the race and after the race. The photo points were selected as those areas thought to contain sensitive resources and/or most likely to change with race associated activities. These areas included, but were not limited to sites:

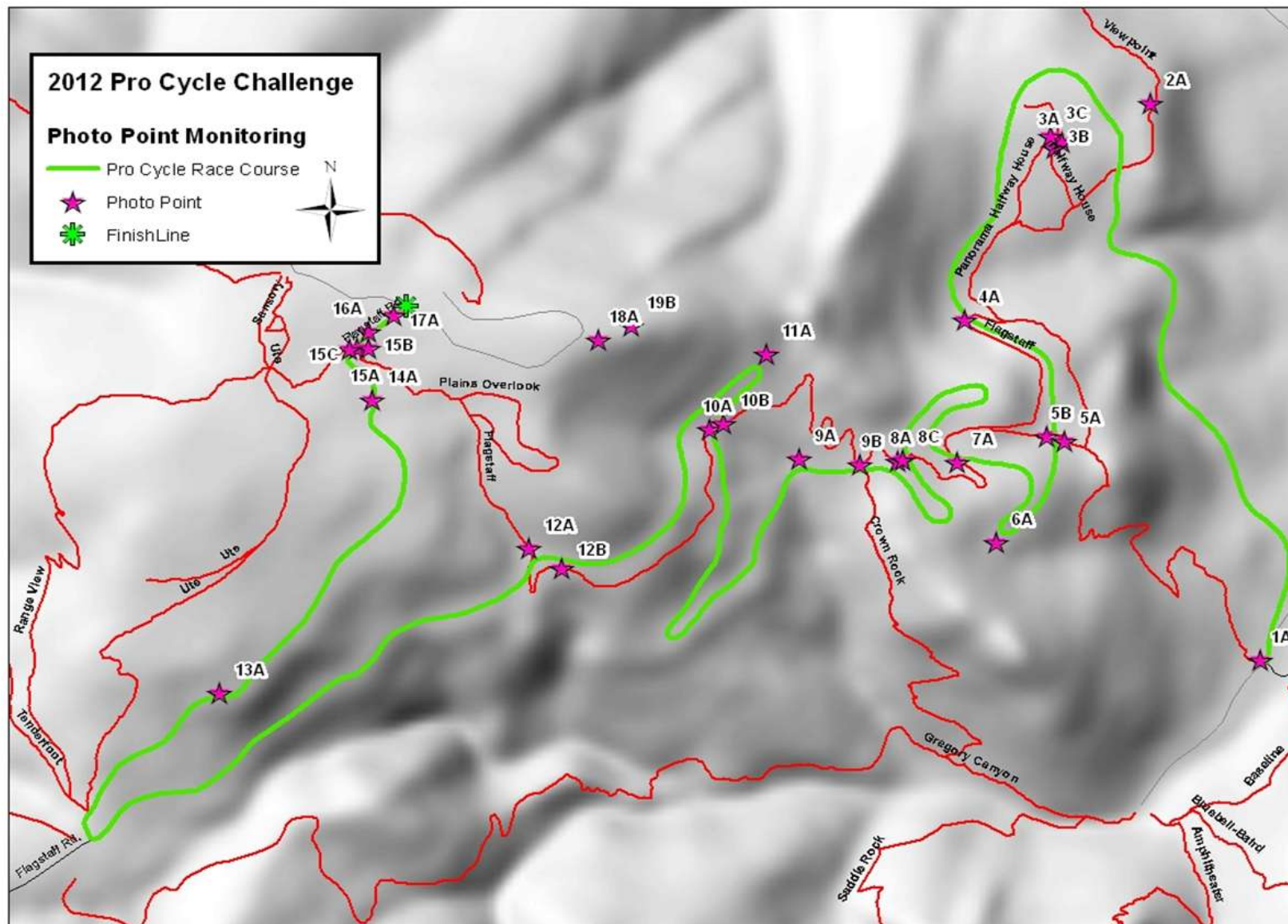
- Designated or undesignated trails temporarily closed by snow fencing, signage and/or personnel;

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<sup>1</sup> A detailed protocol is available from OSMP upon request.

<sup>2</sup> The photos included in this summary are not of printing quality. Original photos, of printing quality, are available upon request.

- Where it was possible and likely that spectators would leave the official route to more quickly access or depart from the race (where there were no fencing, signs or staff); and
- Where spectators were likely to congregate in large numbers for viewing or travel areas along the Flagstaff Summit Road, particularly in areas potentially sensitive to soil loss.



Staff interpreted paired photographs “before” and “after” the race to evaluate and qualitatively document areas in which conditions had changed and identify areas where a management response may be needed.

Staff used a tripod-mounted digital camera to capture a landscape view, centered on a yellow meter-post, to document location and scale of each of the photographs (**Figure 2**). Settings for the tripod and camera along with measurements for the placement of the post were recorded during the pre-race photo interval and then used again for each of the following intervals.



**Figure 2.** Typical photo set-up showing the tripod, meter-post and ground to horizon view

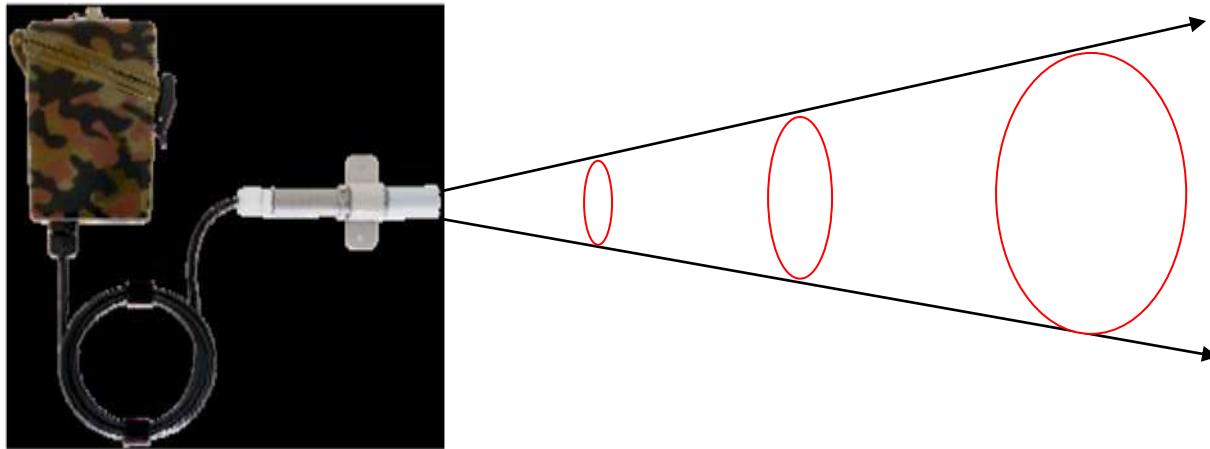
**Note:** The photos included in this summary are not of printing quality. Original photos, of printing quality, are available upon request along with detailed site descriptions.

#### *Infrared Monitor Data*

The TRAFx Generation III monitor (**Figure 3**) is a one-piece unit consisting of an infrared transmitter and an infrared receiver (housed together). The transmitter emits an infrared beam across the trail. When this beam is broken, the receiver records one “count”. Staff placed a TRAFx monitor on the Viewpoint Trail (open for entering and exiting the race) and on the Flagstaff Trail (open for exiting only) near photo point 2 and 5 respectively. The monitors run continuously and were in operation between 8/18/12 and 9/5/12 to give a relative idea of the level of visitation at the monitored locations pre, post and during the race.



Distance from IR scope to trail	2m (6.5 ft.)	4m (13 ft.)	6m (20 ft.)
Diameter of detection zone	0.3m (1 ft.)	0.7m (2.3 ft.)	1.0m (3.3 ft.)

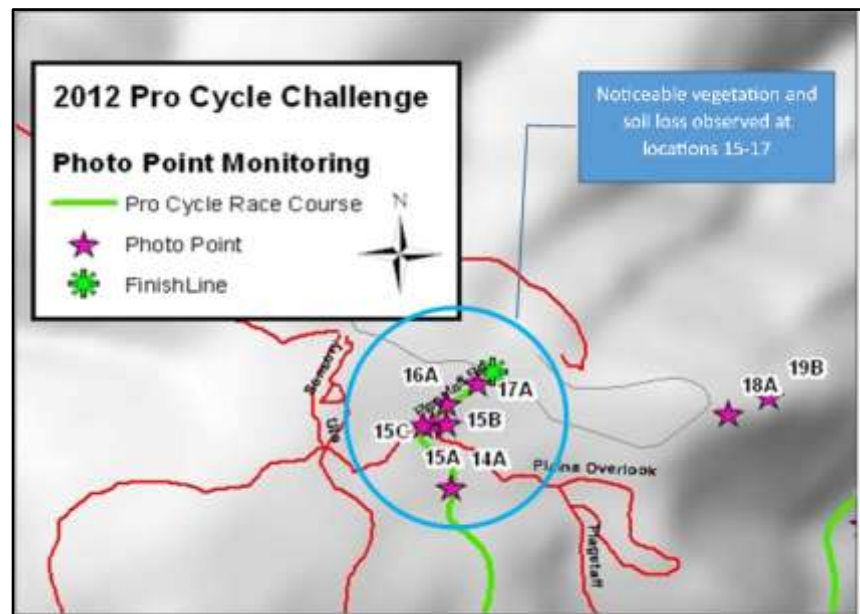


**Figure 3.** TRAFx Generation III monitor showing the beam's detection zone variability at different distances from scope to trail

## Results

### *Photo Points*

Results indicated that the most noticeable changes in ground conditions (e.g., vegetation loss and additional exposed soil) between pre and post-race intervals occurred in the Flagstaff Summit area, including sites 15-17 (**Figure 4**). OSMF resource staff are not concerned about the ability of these sites to recover without the implementation of restoration actions. A few other locations had some or minimal noticeable change in ground conditions. These locations included sites 5, 6, 7 and 11. Photo site 18 had additional organics and duff and less exposed soil between pre and post-race conditions because of OSMF staff restoration activities that occurred in between photo sessions.



**Figure 4.** Sites with the most noticeable change between pre and post-race conditions (15-17)

### *Infrared Monitor Data*

On the day of the race, most trails on OSMP lands in the vicinity of Flagstaff Mountain were closed. The exceptions were that the Viewpoint Trail was open throughout the day for access and egress from the mountain for race observers and other OSMP visitors; and portions of the Flagstaff trail were opened after the conclusion of the race (approximately 3:00 pm) for egress from the mountain.

During race day the Viewpoint Trail monitor recorded approximately 2,800 counts concentrated between noon and 5:00 p.m., with 3:00-4:00 p.m. the busiest hour (i.e., visitors exiting the race). The Flagstaff Trail monitor recorded just over 700 counts almost exclusively between 3:00-5:00 p.m. This is consistent with the trail being open only for visitors exiting the race. Comparable average daily counts for days without an international bike race for the Viewpoint Trail are approximately 140, and 75 for the Flagstaff Trail.

### **Project costs**

The 2012 USA Pro-Cycle Challenge Pre/Post Race Resource Condition Assessment project required approximately 500 hours (~ \$14,000) of staff time. Staff work groups involved in the project include monitoring, ecological systems, environmental planning and education/outreach. Approximately 150 of these hours were one-time consultation and program development costs not anticipated to be needed if the project were repeated in the future. Eliminating specific photo points along with the post-fence, pre-race interval as recommended below would further reduce staff time by approximately 75 hours. The monitoring project required relatively little specialized or disposable equipment and the total materials budget for the project was under \$200.

### **Recommendations**

The following are based upon a qualitative review of the pre and post-race conditions:

- No restoration actions necessary in monitored areas;
- Photo documentation was a useful tool to detect the effects of the race at monitored locations and is recommended to inform decisions about how to improve management of the race;
- Repeating the monitoring for any future race would be beneficial to learn about how the race affects OSMP resources, but the cost needs to be weighed against benefits by departmental leadership to determine if monitoring should be repeated in future years;
- If monitoring is repeated, the following recommendations would improve the project's benefit, effectiveness and efficiency:
  - Eliminate photo points 1A, 5A, 8A, 8C, 10B, 11A, 15B and 19B. These are unlikely to show change in conditions because visitor travel off road or trail is already restricted by fence placement and trailside conditions or because terrain is resistant to visitor travel.
  - Consider additional photo points near the race finish line.
  - Eliminate the post-fence, pre-race interval since observations suggest little impact from fence installation.
  - Determine the locations of race-day infrastructure, ingress and egress routes and fencing sooner in the planning process to facilitate accurate identification of monitoring sites.

- Design subsequent monitoring to consider not only past practices, but also what is most likely to best capture race effects based upon specific logistics of the race. Some key factors can be determined ahead of time with coordination between OSMP and the local organizing committee (e.g., location of race announcers' shelters, tables and other infrastructure). Other factors affecting potential impacts cannot be foreseen, and may require an ad hoc approach such as only recording post-race photography. This includes unanticipated areas of concentrated activity. During the 2012 race, one such area developed where spectators congregated around a portable DJ set up. OSMP and the race organizers may wish to consider ways to manage such activities to address potential safety and resource impact issues.
- Modify methodology as follows:
  - Take photographs at times when shadowing is reduced or at consistent times between sessions.
  - Use the same model camera for all intervals.



**2012 USA Pro-Cycle Challenge - Site ID 1A Center**

Where: Flagstaff Rd., Flagstaff Trail origin

Themes: Flagstaff Trail access; fencing

Results: No noticeable effect from fence placement or spectator activity

Note(s): Start of Flagstaff Mt. race finish



Site 1A: Pre Race  
and Fence



Site 1A: Post Race



Site 1A: Pre Race  
with Fence

## **2012 USA Pro-Cycle Challenge - Site ID 2A Center**

Where: Viewpoint Trail looking toward Flagstaff Rd.

Theme: Concentrated viewing area; potential Flagstaff Rd. access through meadow

Results: No noticeable effect from spectator activity

Note(s): Panorama Point viewing area





## 2012 USA Pro-Cycle Challenge - Site ID 3A Center

Where: Halfway House Trail junction in meadow looking toward Panorama Point

Theme: Concentrated viewing area

Results: No noticeable effect from spectator activity

Note(s): Halfway House meadow viewing area



Site 3A: Pre Race



Site 3A: Post Race

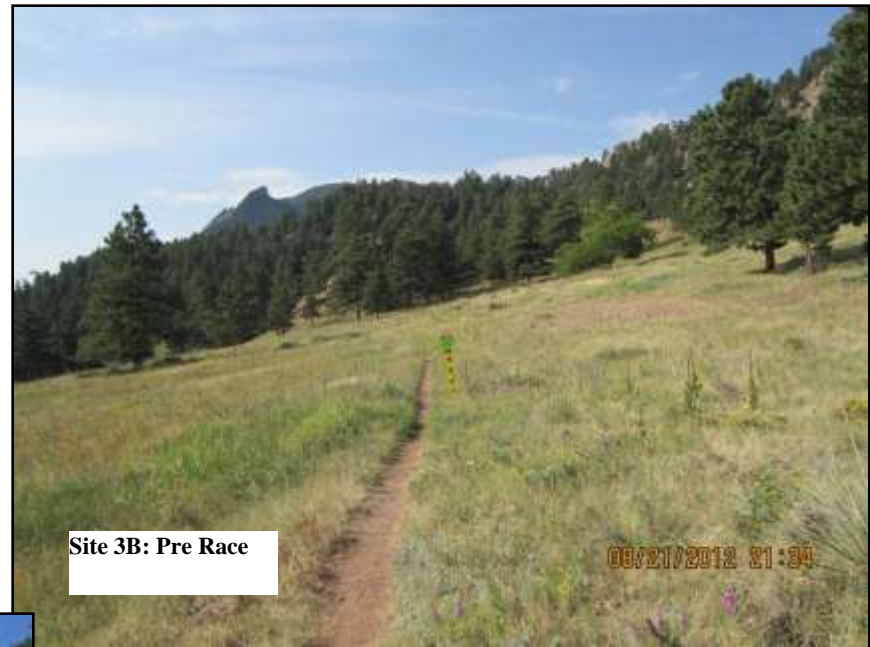
## 2012 USA Pro-Cycle Challenge - Site ID 3B Center

Where: Halfway House Trail junction in meadow looking toward restroom

Theme: Concentrated viewing area

Results: No noticeable effect from spectator activity

Note(s): Halfway House meadow viewing area



## 2012 USA Pro-Cycle Challenge - Site ID 3C Center

Where: Halfway House Trail junction in meadow looking toward Halfway House/Flagstaff Rd.

Theme: Concentrated viewing area

Results: No noticeable effect from spectator activity

Note(s): Halfway House meadow viewing area





## 2012 USA Pro-Cycle Challenge - Site ID 4A Center

Where: Flagstaff Rd., first crossing south of Halfway House

Themes: Flagstaff Trail crossing; fencing

Results: No noticeable effect from fence placement or spectator activity

Note(s): Roadway chalked



Site 4A: Pre Race  
and Fence



Site 4A: Post Race



Site 4A: Pre Race  
with Fence



## 2012 USA Pro-Cycle Challenge - Site ID 4A Other Center

Where: Flagstaff Rd., first crossing south of Halfway House

Themes: Flagstaff Trail crossing; fencing

Results: No noticeable effect from fence placement or spectator activity

Note(s): Roadside viewing area



Site 4A Other: Pre  
Race and Fence



Site 4A Other: Post  
Race



Site 4A Other: Pre  
Race with Fence

**2012 USA Pro-Cycle Challenge - Site ID 5A Center**

Where: Flagstaff Rd. crossing at 1.4 miles looking toward east

Theme: Flagstaff Trail crossing

Results: No noticeable effect from spectator activity

Note(s): None



Site 5A: Pre Race



Site 5A: Post Race



## 2012 USA Pro-Cycle Challenge - Site ID 5B Center

Where: Flagstaff Rd. crossing at 1.4 miles looking toward west

Themes: Flagstaff Trail crossing; fencing; concentrated viewing

Results: Some noticeable change from fence placement or spectator activity

Note(s): Some vegetation loss and additional exposed soil



Site 5B: Pre Race



Site 5B: Post Race



Site 5B: Pre Race  
with Fence



## 2012 USA Pro-Cycle Challenge - Site ID 6A Center

Where: Flagstaff Rd., first switchback south of Halfway House

Themes: Concentrated viewing area; fencing

Results: Some noticeable change from fence placement or spectator activity

Note(s): Minor vegetation loss and additional exposed soil



Site 6A: Pre Race



Site 6A: Post Race



Site 6A: Pre Race  
with Fence

**2012 USA Pro-Cycle Challenge - Site ID 7A Center**

Where: Flagstaff Rd., second crossing east of Crown Rock

Themes: Flagstaff Trail crossing; fencing

Results: Some noticeable change from fence placement or spectator activity

Note(s): Minor vegetation loss and additional exposed soil



Site 7A: Pre Race  
with Fence



Site 7A: Post Race



## **2012 USA Pro-Cycle Challenge - Site ID 8A Center**

Where: Flagstaff Rd., first crossing east of Crown Rock looking toward east

Themes: Flagstaff Trail crossing; fencing; potential Flagstaff Rd. access through side slope

Results: No noticeable effect from spectator activity

Note(s): None



**Site 8A: Pre Race  
with Fence**



**Site 8A: Post Race**



## **2012 USA Pro-Cycle Challenge - Site ID 8C Center**

Where: Flagstaff Rd., first crossing east of Crown Rock looking toward west

Themes: Flagstaff Trail crossing; fencing; concentrated viewing

Results: No noticeable effect from fence placement or spectator activity

Note(s): Roadside viewing area; fence installed before pre race photos taken



## 2012 USA Pro-Cycle Challenge - Site ID 9A Center

Where: Flagstaff Rd., upper Crown Rock climbing access

Themes: Concentrated viewing area; fencing; potential upper Flagstaff Rd. access uphill to northwest

Results: No noticeable effect from fence placement or spectator activity

Note(s): Roadside viewing area





## 2012 USA Pro-Cycle Challenge - Site ID 9B Center

Where: Flagstaff Rd., Crown Rock climbing area looking toward north

Themes: Flagstaff Trail crossing; concentrated viewing area; fencing

Results: No noticeable effect from fence placement or spectator activity

Note(s): Roadside viewing area



Site 9B: Pre Race  
and Fence



Site 9B: Post Race



Site 9B: Pre Race  
with Fence

## 2012 USA Pro-Cycle Challenge - Site ID 10A Center

Where: Flagstaff Rd., first crossing south of contact corner looking toward west

Themes: Flagstaff Trail crossing; fencing; potential access to upper Flagstaff Rd. through switchback

Results: No noticeable effect from fence placement or spectator activity

Note(s): Roadside viewing area





## 2012 USA Pro-Cycle Challenge - Site ID 10B Center

Where: Flagstaff Rd., first crossing south of contact corner looking west toward road

Themes: Flagstaff Trail crossing; fencing

Results: No noticeable effect from fence placement or spectator activity

Note(s): None



Site 10B: Pre Race  
and Fence



Site 10B: Post Race



Site 10B: Pre Race  
with Fence

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**2012 USA Pro-Cycle Challenge - Site ID 11A Center**

Where: Flagstaff Rd., contact corner

Themes: Concentrated viewing area; fencing; potential Flagstaff Summit access uphill to northwest

Results: No noticeable effect from spectator activity

Note(s): Roadside viewing area



Site 11A: Pre Race



Site 11A: Post Race



## 2012 USA Pro-Cycle Challenge - Site ID 12A Far Center

Where: Flagstaff Rd., baseline picnic area looking toward north

Themes: Flagstaff Trail crossing; concentrated viewing area; fencing

Results: No noticeable effect from fence placement or spectator activity

Note(s): Roadside viewing area



## 2012 USA Pro-Cycle Challenge - Site ID 12A Close Center

Where: Flagstaff Rd., baseline picnic area looking toward north

Themes: Flagstaff Trail crossing; concentrated viewing area; fencing

Results: No noticeable effect from fence placement or spectator activity

Note(s): Roadside viewing area



Site 12A Close: Pre Race and Fence



Site 12A Close: Post Race



Site 12A Close: Pre Race with Fence



## **2012 USA Pro-Cycle Challenge - Site ID 12B Center**

Where: Flagstaff Rd., approximately 200 feet east of baseline picnic area looking north toward Flagstaff Rd.

Theme: Potential Flagstaff Trail access from road

Results: No noticeable effect from spectator activity

Note(s): None



**Site 12B: Pre Race**



**Site 12B: Post Race**

## 2012 USA Pro-Cycle Challenge - Site ID 13A Center

Where: Flagstaff Summit Rd., approximately 800 feet east of vehicle gate looking toward north

Theme: Concentrated viewing area

Results: No noticeable effect from spectator activity

Note(s): Roadside viewing area





## 2012 USA Pro-Cycle Challenge - Site ID 14A Center

Where: Flagstaff Summit Rd., approximately 300 feet south of last Flagstaff Trail crossing looking toward west

Theme: Concentrated viewing area

Results: No noticeable effect from spectator activity

Note(s): Roadside viewing area



## 2012 USA Pro-Cycle Challenge - Site ID 15A Center

Where: Flagstaff Summit Rd., last Flagstaff Trail crossing looking toward west

Themes: Flagstaff Trail crossing; concentrated viewing area; fencing

Results: Some noticeable change from finishing corral placement or spectator activity

Note(s): Some vegetation loss and additional exposed soil



Site 15A: Pre Race and Fence



Site 15A: Post Race



Site 15A: Pre Race with Fence



## 2012 USA Pro-Cycle Challenge - Site ID 15B Center

Where: Flagstaff Summit Rd., last Flagstaff Trail crossing looking east toward meadow

Themes: Flagstaff Trail crossing; fencing

Results: No noticeable effect from spectator activity

Note(s): None



## 2012 USA Pro-Cycle Challenge - Site ID 15C Center

Where: Flagstaff Summit Rd., last Flagstaff Trail crossing looking east toward trail access

Themes: Flagstaff Trail crossing; fencing

Results: Some noticeable change from finishing corral placement, fence placement or spectator activity

Note(s): Some vegetation loss and additional exposed soil; duff and organics spread inward on roadway





## 2012 USA Pro-Cycle Challenge - Site ID 16A Center

Where: Flagstaff Summit Rd., approximately 200 feet west of finish line looking toward north

Theme: Concentrated viewing area

Results: Some noticeable change from finishing corral placement or spectator activity

Note(s): Some vegetation loss and additional exposed soil



## 2012 USA Pro-Cycle Challenge - Site ID 17A Center

Where: Flagstaff Summit Rd., finish line area looking toward north

Theme: Concentrated viewing area

Results: Extensive noticeable change from finishing corral placement, race equipment set-up or spectator activity

Note(s): Widespread vegetation loss and additional exposed soil; race finish area





## 2012 USA Pro-Cycle Challenge - Site ID 18A Center

Where: Flagstaff Summit Rd., looking toward south from Amphitheater ADA trail

Themes: Fencing; award ceremony area

Results: Some noticeable change from fence placement, staff activity or spectator activity

Note(s): OSMP restoration crew disguised social trail with organic materials on-site; slash log moved off-trail



Site 18A: Pre Race and Fence



Site 18A: Post Race with Fence



Site 18A: Pre Race with Fence



## 2012 USA Pro-Cycle Challenge - Site ID 19B Center

Where: Flagstaff Summit Rd., looking toward Amphitheater from below on the east

Themes: Fencing; award ceremony area

Results: No noticeable effect from fence placement or spectator activity

Note(s): None



Site 19B: Pre Race and Fence



Site 19B: Post Race



Site 19B: Pre Race with Fence